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10/555,067	10/28/2005	Yoshiaki Takahashi	Q75504	9174

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
WILSON, MICHAEL H	

ART UNIT	PAPER NUMBER
1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/555,067	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	MICHAEL WILSON	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14 and 22-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14 and 22-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office action is in response to Applicant's amendment filed 18 December, 2008, which cancels claims 1-13 and 15-21 amends claim 14.

Claims 14 and 22-25 are pending.

2. The Objection to the drawings as failing to comply with 37 CFR 1.84(p)(5) is withdrawn due to applicants amending of the specification in the reply filed 18 December, 2008.

3. The Objection to claim 14 under 37 CFR 1.75(c) as being in improper form is withdrawn due to amending of the claim in the reply filed 18 December, 2008.

4. The rejections of claims 1-7, 11, 12, and 17-20 in the Office Action mailed 18 September, 2008 are moot due to applicants cancelling the claims in the reply filed 18 December, 2008.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by Irwin et al. (Luminescent gold(I) acetylides: from model compounds to polymers.).

Regarding claim 22, Irwin et al. disclose an organic polymer light-emitting element material the gold complex having a gold complex as a cross linking group (abstract and page 3543 chart 1), which meets instant formula (5). The gold polymer is cross linked into the polymer on both the phosphine and acetylide end of the gold complex (table 1, page 3543).

Regarding the method limitations recited in claim 22, the examiner notes that even though a product-by-process is defined by the process steps by which the product is made, determination of patentability is based on the product itself. *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). As the court stated *in Thorpe*, 777 F.2d at 697, 227 USPQ at 966 (The patentability of a product does not depend on its method of production. *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969). If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.). Additionally, since the polymer is the only positive limitation for the material, any reference anticipating the polymer anticipates the material.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikehira et al. (US 2002/0193532 A1) in view of Lu et al. (The 3($\pi\pi^*$) emission of Cy3Pau(C≡C)nAuPCy3 (n=3, 4). Effect of chain length upon acetylenic 3($\pi\pi^*$) emission.).

Regarding claim 14, Ikehira et al. disclose an organic polymer light-emitting element material having a gold complex (page 5, [0017] last structure) as part of the side chain [0037]. Additionally the reference discloses wherein the gold complex contains an organic phosphine ligand. The gold complex would necessarily be bonded to the polymer backbone via one of the phosphine ligands. However the reference does not explicitly disclose a gold complex with a monophosphine ligand with the structure of instant formula (7).

Lu et al. teach luminescent gold(I) compounds represented by instant formula (7) (abstract) and that these complexes are of great interest for OLED applications (page 2343, first column lines 9-10). The gold complexes are taught to have phosphine (tricyclohexylphosphine) and alkynyl ligands (page 2343, chart 1), which would meet instant formula (7). The reference teaches the compounds to be luminescent in the

solid state (page 2344, second column, lines 3-4) and exhibit red emission (page 2344, second column, lines 33-35).

It would be obvious to one of ordinary skill in the art at the time of the invention to combine the gold complex of Lu et al. with the polymer of Ikehira et al. One of ordinary skill in the art would reasonably expect the gold complex of Lu et al. to be suitable given that Lu et al. teach the complex is emissive in the solid state and Ikehira et al. teach gold phosphine complexes are suitable luminescent complexes bound to the polymer of Ikehira et al. One of ordinary skill in the art would be motivated by a desire to have red emission.

10. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin et al. (Luminescent gold(I) acetylides: from model compounds to polymers.) as applied to claim 22 above and in view of Ikehira et al. (US 2002/0193532 A1) and Senoo et al. (US 2002/0045062 A1).

Regarding claim 23, Irwin et al. disclose all the claim limitations as set forth above. Additionally the reference discloses wherein the gold complex contains an organic phosphine ligands (abstract and page 3543 chart 1). The gold polymer is cross linked into the polymer on both the phosphine and acetylide end of the gold complex (table 1, page 3543). However the reference does not explicitly disclose that a polymerizable alkene is used in the polymerization process.

Senoo et al. teach a polymer electroluminescent device (abstract). The reference teaches using alkene functional groups to form the monomers into a polymer

[0015]. By using polymerizable double bonds, which have radical polymerizability, the reference teaches high luminance at low voltage with high durability can be attained with easy and inexpensive production [0017].

It would be obvious to one of ordinary skill in the art at the time of the invention to use the polymerizable alkene groups as taught by Senoo et al. in the polymer and device of modified Ikehira et al. One of ordinary skill in the art would reasonably expect such a combination to be suitable given that Senoo et al. teach the polymer made from polymerizing double bonds as a suitable polymer for use in electroluminescent devices. One of ordinary skill would be motivated by a desire to have high luminance at low voltage with high durability can be attained with easy and inexpensive production.

11. Claims 24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irwin et al. (Luminescent gold(I) acetylides: from model compounds to polymers.) as applied to claims 1 and 22 above and in view of Ikehira et al. (US 2002/0193532 A1).

Regarding claims 24 and 25, Irwin et al. disclose all the claim limitation as set forth above. Additionally the reference discloses the gold complex having a gold complex as a cross linking group (abstract and page 3543 chart 1), which meets instant formula (5). The gold polymer is cross linked into the polymer on both the phosphine and acetylide end of the gold complex (table 1, page 3543). However, the reference does not explicitly disclose the polymer used in an electroluminescent device.

Ikehira et al. teach a polymer organic electroluminescent element with a pair of electrodes having interposed there between at least one layer comprising one or more

organic polymer light-emitting element material ([0175]-[0176]). The reference also teaches that a gold complex is suitable for the emissive compound within the polymer (page 5, [0017] last structure).

It would be obvious to one of ordinary skill in the art at the time of the invention to combine the gold compound of Irwin et al. with the polymer and device of Ikehira et al. One of ordinary skill in the art would reasonably expect the complex of Irwin et al. to be suitable given that Ikehira et al. teach that gold complexes are suitable and that Irwin et al. disclose the gold complexes are luminescent in the solid state in both monomeric and polymeric forms. One of ordinary skill in the art would be motivated by a desire to utilize the light-emission from the complexes of Irwin et al.

12. Claims 22, 24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikehira et al. (US 2002/0193532 A1) in view of Irwin et al. (Luminescent gold(I) acetylides: from model compounds to polymers.).

Regarding claims 22, 24, and 25, Ikehira et al. disclose an organic polymer light-emitting element material having a gold complex (page 5, [0017] last structure) Additionally the reference discloses wherein the gold complex contains an organic phosphine ligand. The gold complex would necessarily be bonded to the polymer backbone via one of the phosphine ligands. The reference also discloses an organic polymer light-emitting element comprising a pair of electrodes having interposed there between at least one layer comprising one or more organic polymer light-emitting

element material ([0175]-[0176]). However the reference does not explicitly disclose a gold complex with a structure of instant formula (5).

Irwin et al. teach luminescent gold(I) compounds (abstract). The gold(I) compounds can be monomers, dimers or polymers (abstract). The gold complexes are taught to have a phosphine ligand with a structure of instant formula (1) and an alkynyl ligand (page 3543, chart 1), which would meet instant formula (5). The reference teaches the compounds are luminescent as solids as monomer, dimer, and polymer (pages 3544-3545, Luminescence Properties, paragraphs 1-3), and the monomer complex is taught to exhibit intense emission (page 3544, Luminescence Properties, paragraph 1)

It would be obvious to one of ordinary skill in the art at the time of the invention to combine the gold complex of Irwin et al. with the polymer of Ikehira et al. One of ordinary skill in the art would reasonably expect the gold complex of Irwin to be suitable given that Irwin et al. teach the complex is emissive in the solid state as both a monomer and polymer. One of ordinary skill in the art would be motivated by a desire to have intense red emission.

Regarding the method limitation recited in claim 22, the examiner notes that even though a product-by-process is defined by the process steps by which the product is made, determination of patentability is based on the product itself. *In re Thorpe*, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). As the court stated *in Thorpe*, 777 F.2d at 697, 227 USPQ at 966 (The patentability of a product does not depend on its method of production. *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969).

If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.).

13. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikehira et al. (US 2002/0193532 A1) in view of Irwin et al. (Luminescent gold(I) acetylides: from model compounds to polymers.) as applied to claim 22 above, and further in view of Senoo et al. (US 2002/0045062 A1).

Regarding claim 23, modified Ikehira et al. disclose all the claim limitations as set forth above. However the reference does not explicitly disclose that a polymerizable alkene is used in the polymerization process.

Senoo et al. teach a polymer electroluminescent device (abstract). The reference teaches using alkene functional groups to form the monomers into a polymer [0015]. By using polymerizable double bonds, which have radical polymerizability, the reference teaches high luminance at low voltage with high durability can be attained with easy and inexpensive production [0017].

It would be obvious to one of ordinary skill in the art at the time of the invention to use the polymerizable alkene groups as taught by Senoo et al. in the polymer and device of modified Ikehira et al. One of ordinary skill in the art would reasonably expect such a combination to be suitable given that Senoo et al. teach the polymer made from polymerizing double bonds as a suitable polymer for use in electroluminescent devices.

One of ordinary skill would be motivated by a desire to have high luminance at low voltage with high durability can be attained with easy and inexpensive production.

Response to Arguments

14. Applicant's arguments filed 18 December, 2008 have been fully considered but they are not persuasive.

Applicant argues that the gold complex structure of Irwin et al. is contained in a main chain of the compounds, not as a part of a “cross-linking group” or “a side chain” as required by the present claims. However given the broad recitation of a crosslinking group is recited as separate from the side chain (claims 14 and 22: “part of the side chain or crosslinking group”) it is the examiners position that this broad recitation of a crosslinking group would then include “crosslinking groups” which incorporate into the main chain. In this view the gold complex may be considered to “cross-link” the monomeric complexes forming the polymer, thereby meeting the present claims.

Applicant further argues that Irwin et al. discloses a polymer having a rigid structure comprising conjugation and a gold atom. Such "rigid-rod polymers," applicant asserts, are insoluble in common organic solvents (page 3541, right column and page 3545, second paragraph of the left column). In contrast, all the polymers of the present invention have a gold complex in a side chain and are soluble in organic solvents. Irwin et al. further discloses that the excited state is stabilized by the greater degree of delocalization in the conjugated polymers and that the red shift and reduced intensity in the emission bands are observed which are attributed to the greater delocalization in

the polynuclear page 3545, second paragraph of the left column). In contrast, applicant argues the polymer light-emitting element material having a gold complex structure in a side chain of the present invention has the same emission wavelength as the original emission wavelength of the gold complex structure. Finally applicant notes that Ikehira et al. discloses a polymeric light-emitting substance having in the main chain or side chain a metal complex structure showing light emission in paragraph [0009]. However, Ikehira et al. also teaches that "particularly, it is preferable that the polymeric light emitting substance is a conjugated type polymeric light emitting substance," and does not disclose specific examples of non-conjugated polymers.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., solubility, unchanged emission from the monomer, and non-conjugated polymers) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL WILSON whose telephone number is (571) 270-3882. The examiner can normally be reached on Monday-Thursday, 7:30-5:00PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571) 272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MHW

/Callie E. Shosho/
Supervisory Patent Examiner, Art Unit 1794